



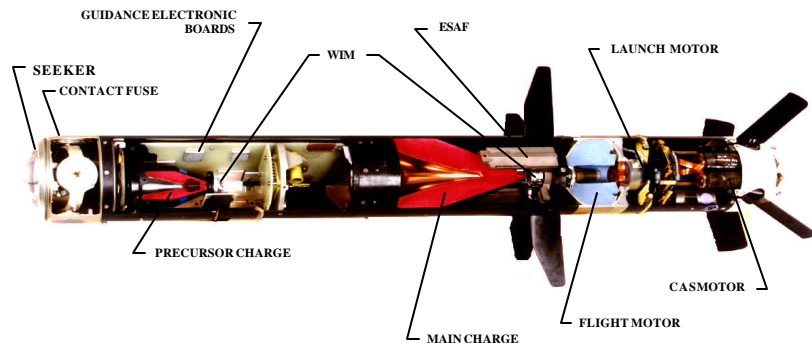


**MANEUVER
BOS**

JAVELIN

Close Combat Weapon Systems

MISSILE



SYSTEM DESCRIPTION: JAVELIN is a medium range, manportable, shoulder-launched, fire and forget, anti-armor weapon system critical to the operational design of the Army's Future Force capable of defeating multiple types of targets. It is replacing the wire guided DRAGON missile system. JAVELIN includes two major components: a reusable command launch unit (CLU) and a missile sealed in a disposable launch tube assembly. The CLU incorporates an integrated day/night sight. JAVELIN uses fire-and-forget technology which allows the gunner to lock on to the target, fire the missile, and immediately take cover. Other features include both top attack and direct attack options, a tandem warhead, an imaging infrared seeker, and a soft launch that allows the missile to be fired from enclosures. In addition to its high lethality, the JAVELIN is ideally suited to rapid deployment due to its size, its high reliability and its very small logistics tail. Javelin is a joint Army / Marine Corps program.

SYSTEM CHARACTERISTICS: The total system weight is 49.5 lbs. with the round weighing 35 lbs. and the CLU weighing 14.5 lbs. The round has a length of 47.2 inches and an endcap diameter of 11.75 inches. The missile contained inside the launch tube assembly (LTA) has a diameter of 5 inches. JAVELIN has two attack modes. Top attack, which is the primary mode, allows the missile to impact the less heavily armored top area of the armored vehicle. The direct fire mode allows the weapon to be fired at targets under cover. Missile range is in excess of 2500 meters.

SENSOR/SEEKER: The missile seeker focal plane array (FPA) is an imaging infrared (IIR) 64x64 element consisting of Mercury-Cadmium-Telluride (Hg-Cd-Te) detectors combined with an integrated readout circuit. The CLU FPA is a 240x2 scanning array integral with a Dewar/Cooler unit.

WARHEAD: The system's tandem warhead contains both a precursor and a main charge warhead. The precursor warhead has a conical shaped molybdenum liner with LX-14 explosive and is designed to initiate explosive reactive armor. The main charge warhead has a trumpet copper liner with LX-14 explosive and is designed to penetrate and defeat current base armor and projected armor threats.

TARGET SETS: JAVELIN is designed to defeat current and future battle tanks and armored personnel carriers, both stationary and moving. A secondary mission capability is to defeat/destroy bunker targets and provide self defensive capability against hovering helicopters.

CONTRACTOR: Joint Venture between Raytheon Systems Company and Lockheed-Martin Corporation.

ACQUISITION PHASE: JAVELIN entered full rate production in May 97. Production is scheduled to continue through FY 05.

MILESTONES:

Milestone I (DSARC)	May 86
Milestone II (DAB)	June 89
LRIP Decision (OSD)	June 94
Full Rate Production (ASARC)	May 97

FIELDING: FUE: Jun 96. First OCONUS fielding completed Apr 00. Current plans call for fielding to Active and Reserve Component Infantry, Armored Scouts, and Combat Engineer Units.

FIELDING COMPLETED TO:

U.S. Marine Corps	U.S. Army Special Forces Group
U.S. Army Rangers	101 st Airborne Division (Air Assault)
82 nd Airborne Division	2 nd , 3 rd , 4 th , and 25 th Infantry Divisions
10 th Mountain Division	172 nd IN BDE and 173 rd ABN BDE
1 st & 2 nd BDEs,	3 rd BDE, 1 st Infantry Division
1 st Armored Div	1 st and 2 nd SBCTs
1 st Calvary	

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MANEUVER BOS

JAVELIN

Close Combat Weapon Systems **COMMAND LAUNCH UNIT (CLU)/ TRAINING DEVICES**



SYSTEM DESCRIPTION: The CLU is a reusable, lightweight, battery powered, passive day and night sighting device that provides the interface between the JAVELIN missile and gunner. The CLU is used for battlefield surveillance, target recognition and acquisition, launch control, and damage assessment. Each of these tasks is initiated through controls located on the handgrips. The CLU consists of the following functional components: a night vision sight, a day sight, a cathode ray tube (CRT) display, a status display, controls, a CLU/missile interface connector, a battery and test connector.

The JAVELIN Training System consists of three training devices; each fulfills a specific role in training. These devices are comprised of:

Enhanced Producibility Basic Skills Trainer (EPBST). The EPBST is a classroom trainer designed to provide the soldier instructional exercises for teaching the basic skills required to engage targets with the JAVELIN system. It consists of an instructor station, a student station, comprised of a Simulated Command Launch Unit (SCLU) and Missile Simulation Round (MSR) and shipping and storage containers.

Field Tactical Trainer (FTT). The FTT is used to refine the gunners abilities, allowing gunner participation in both range training and force on force exercises. It consists of a student station, instruction station, batteries, charger, and interface cables.

Missile Simulation Round (MSR). The MSR is used to familiarize the soldier with the physical characteristics of the JAVELIN round. It is a full size non-operational replica of the JAVELIN round in the field handling mode.

SYSTEM CHARACTERISTICS: The night vision sight uses a scanning focal plane array containing a 240x2 Mercury-Cadmium-Telluride (Hg-Cd-Te) detector integral with the detector-dewar-cooler (DDC). Total weight is 14.5 lbs. The CLU has a length of 14.75 in., height of 13 in., and width of 16.5 in. and is able to fit in the "Alice" pack. The system weight and physical dimension of each of the trainer simulated rounds is the same as the tactical round $\pm 5\%$. The MSR is also used as the simulated round for the EPBST.

SENSOR/SEEKER: The CLU uses a 240 x 2 Hg-Cd-Te focal plane array.

The FTT uses CLU imagery to emulate the missile seeker and incorporates the acquisition module of the JAVELIN tactical tracker software. This software has also been ported to the EPBST allowing an accurate simulation of the tactical system software functions by the training devices.

WARHEAD: NotApplicable

TARGET SETS: The CLU is used for surveillance and target acquisition. The training devices are used for training the gunners/users.

CONTRACTOR: Joint venture between Raytheon Systems Co. and Lockheed-Martin Corp. CLU is produced at Tucson, AZ. ECC International and Fokker, as subcontractors to the Joint Venture, produce the FTT (ECC,Fokker) and the EPBST (ECC). The Training Support Center at Ft. Benning, GA produces the MSR.

ACQUISITION PHASE: JAVELIN entered full rate production in May 97. Production is scheduled to continue through FY 05.

MILESTONES:

Milestone I (DSARC)	May 86
Milestone II (DAB)	June 89
LRIP Decision (OSD)	June 94
Full Rate Production (ASARC)	May 97

FIELDING: FUE: Jun 96. First OCONUS fielding completed Apr 00. Current plans call for fielding to Active and Reserve Component Infantry, Armored Scouts, and Combat Engineer Units.

FIELDING COMPLETED TO:

U.S. Marine Corps	U.S. Army Special Forces Group
U.S. Army Rangers	101 st Airborne Division (Air Assault)
82 nd Airborne Division	2 nd , 3 rd , 4 th , and 25 th Infantry Divisions
10 th Mountain Division	172 nd IN BDE and 173 rd ABN BDE
1 st & 2 nd BDEs,	3 rd BDE, 1 st Infantry Division
1 st Armored Div	1 st and 2 nd SBCTs
1 st Calvary	

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JAVELIN P3I WEAPON SYSTEM

Close Combat Weapon Systems

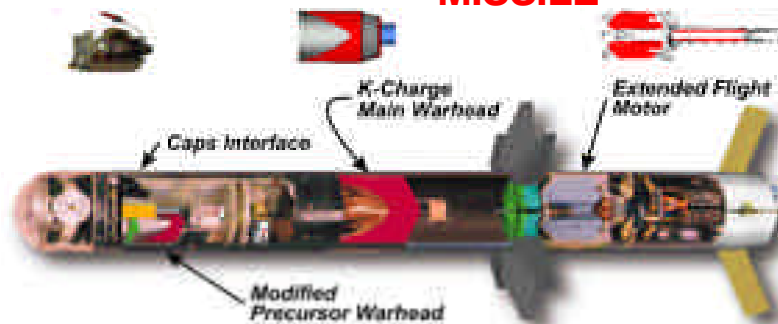
COMMAND LAUNCH UNIT

- Local Area Processing
- Electronic Zoom
- Electronic Stabilization
- Standard RS 170 Video



Increased Threat Detection, Recognition & Identification Range

MISSILE



SYSTEM DESCRIPTION: Javelin P3I provides a medium range, manportable, shoulder launched, fire and forget, anti-armor weapon system. The system provides decreased time to target, increases detection, recognition, and identification, adds counter active protection system interface and extends missile range (3-4KM)

POTENTIAL FUTURE CAPABILITIES:

- Advanced IIR seeker (128 x 128 FPA)
- Guidance Electronic Unit
- Multimode Warhead
- 4-5 KM missile range
- Beyond line of sight

SYSTEM CHARACTERISTICS: The total system weight is 49.5 lbs with the Round weighing 35 lbs and the CLU weighing 14.5 lbs. The Round is fully compatible with the existing LTA. It maintains both top attack and direct fire capability.

SENSOR/SEEKER: The missile seeker FPA is an imaging infrared (IIR), 64x64 element consisting of Hg-CD-Te detectors combined with an integrated readout circuit.

CLUFPA is a 240x2 scanning array. Resolution is enhanced by increasing the optics to 4.0 inches and improved signal processing. Electronic zoom, electronic stabilization RS170 video, and local area processing are included for improved performance and capability.

FLIGHT MOTOR: The flight motor case is extended by 1 inch to increase missile range.

WARHEAD: The system's tandem warhead integrates K-Charge Warhead. The K-Charge maintains current system lethality while reducing total warhead weight by 2 lbs.

CAPS: The system integrates a Counter Active Protection System (CAPS) interface in the Guidance Section.

ACQUISITION PHASE: System development was initiated in AUG 01.

MILESTONES:

Program Start	AUG 01
Production Deliverables	JULY 06

FIELDING: P3I block upgrades are planned for integration into FRP8 (FY 06) and beyond.

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**MANEUVER
BOS**

TOW 2A

Close Combat Weapon Systems

MISSILE



SYSTEM DESCRIPTION: The TOW (Tube-launched, Optically-tracked, Wire-guided) missile is a heavy anti-tank weapon system, consisting of a launcher and a missile. The gunner defines the aimpoint by maintaining the sight cross hairs on the target. The launcher automatically steers the missile along the line-of-sight toward the aimpoint via a pair of wires which physically link the missile and the launcher. The TOW 2A configuration is the only direct attack version of the TOW family of missiles capable of defeating modern threat targets. It consists of a single main warhead and a standoff probe. The probe contains a precursor charge which detonates upon contact with the target for pre-emptive removal of reactive armor. The main charge is detonated by a subsequent timed interval or by contact with the target. The missile is fired from the Bradley, HMMWV, Stryker ATGM Vehicle, USMC AH-1 Cobra helicopter, or a ground mount.

SYSTEM CHARACTERISTICS: The TOW 2A missile is optimized for performance against tanks with reactive armor and is also an effective assault weapon against buildings and field fortifications. Range is 65 to 3750 meters. The TOW 2A configuration weight varies from 47.1 to 49.9 lbs. (digital vs. analog guidance) and is 6 inches in diameter, nominal. Encased, the weights are 61.8 to 64 lbs., and the diameter is nominally 8.6 inches.

SENSOR/SEEKER: The TOW 2A has two impact sensors. The sensors are crush switches located in the probe tip and in the main-charge ogive.

WARHEAD: The TOW 2A main warhead weighs 13.5 lbs., and is 6 inches in diameter. It contains a single copper liner and LX-14 explosive. The precursor warhead is 38 millimeters in diameter, contains a copper liner and LX-14.

TARGET SETS: Tanks, armored vehicles and field fortifications.

CONTRACTOR: Raytheon Systems Company.

ACQUISITION PHASE: U.S. systems in sustainment. Foreign systems in production and sustainment.

MILESTONES: The last U.S. TOW 2A missile was produced in Jul 93. FMS production has continued through current FY 02 contract, awarded Aug 02.

FIELDING: FUE: FY 87. Fielded to US Army light and heavy forces, U.S. Marine Corps, and Foreign Military Sales to over 40 other countries.

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**MANEUVER
BOS**

TOW 2B

Close Combat Weapon Systems

MISSILE



**TOW 2B
w/Aero Modifications**

**T-72 at 4,200 Meters
27 June 2002**



SYSTEM DESCRIPTION: The TOW (Tube-launched, Optically-tracked, Wire-guided) missile is a heavy anti-tank weapon system, consisting of a launcher and a missile. The gunner defines the aimpoint by maintaining the sight cross hairs on the target. The launcher automatically steers the missile along the line-of-sight toward the aimpoint via a pair of wires which physically link the missile and the launcher. The TOW 2B configuration is the most modern, capable missile in the TOW family. It is a fly-over, shoot-down version with the actual missile flight path offset above the gunner's aimpoint. TOW 2B flies over the target and uses a laser profilometer and magnetic sensor to detect and fire two downward-directed, explosively formed penetrator warheads into the target. The TOW 2B Aero modifications incorporate a new aerodynamic nose and additional wire to increase the range to 4500 meters. The missile is fired from the Bradley, HMMWV, Stryker ATGM Vehicle and ground mount.

SYSTEM CHARACTERISTICS: The TOW 2B Missile is optimized for performance against tanks and is also an effective assault weapon against buildings and field fortifications. The missile is fired directly from the case. Range is 200 to 4,500 meters. The TOW 2B configuration weight is 49.8 lbs. It is 6 inches in diameter, nominal, and 49 inches in length. Encased, the weight is 63.9 lbs., and the diameter is 8.6 inches.

SENSOR/SEEKER: The TOW 2B has three sensors: laser, magnetic, and impact (crush switch). Target detection range is from 0.3 meters to 7.5 meters.

WARHEAD: Warhead unit contains two EFP warheads weighing approximately 1.4 lbs each. Liners are of tantalum, and are formed and propelled by LX-14 explosive.

TARGET SETS: Tanks, armored vehicles, and field fortifications.

CONTRACTOR: Raytheon Systems Company.

ACQUISITION PHASE: US systems in sustainment. Foreign systems in production and sustainment. US Army will restart production FY 04-09.

MILESTONES: The last US TOW 2B missile was produced in July 1997. FMS production has continued through current FY 02 contract awarded in Aug 02. US production will resume FY 04-09 for TOW 2B with Aero modifications.

FIELDING: FUE: FY 91. Fielded to US Army light and heavy forces and Stryker Brigades. IOC: FY 93. US production will resume FY 04-09 for TOW 2B with Aero modifications.

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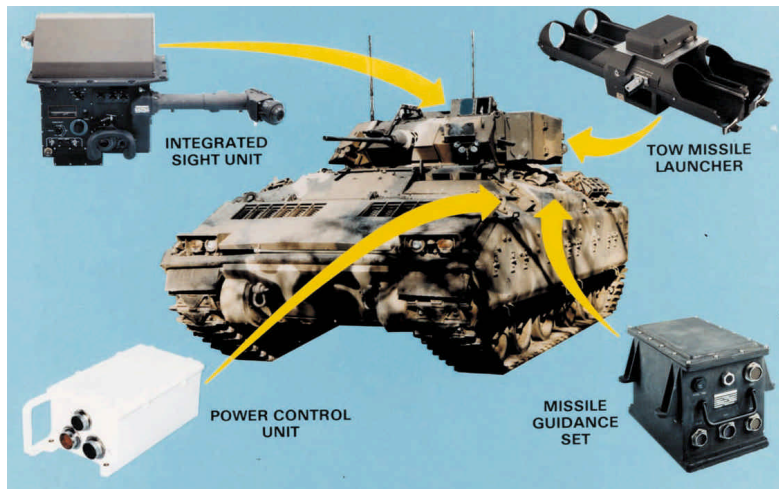


**MANUEVER
BOS**

BRADLEY TOW 2 SUBSYSTEM (T2SS)

Close Combat Weapon Systems

**FIRE
CONTROL**



SYSTEM DESCRIPTION: The Bradley TOW 2 Subsystem (T2SS) is the fire control system for the Bradley A2. The system incorporates day sight optics and first-generation forward looking infrared (FLIR) sights. As a result of the lessons learned from Operation Desert Storm, an eye-safe laser range finder was added to provide precise weapons delivery. The Bradley T2SS fires all versions of TOW missiles.

SYSTEM CHARACTERISTICS: The Bradley T2SS consists of an Integrated Sight Unit (ISU), Missile Guidance Set (MGS), TOW Missile Launcher (TML), and associated turret cables. The ISU incorporates day sight optics, 1st generation FLIR, and Bradley Eye-Safe Laser Range Finder (BELRF) to provide precise weapons delivery with 4X and 12X sight magnification and identical viewing for the gunner and commander. The MGS provides built-in test (BIT) systems self-test, flight correction commands to the missile based on tracking error signals, automatic super elevation of the 25 mm cannon and 7.62 mm machine gun, and tracking of the missile by day sight or FLIR. The TML provides the electro-mechanical link between the missile and the MGS and accommodates the arming of two missiles. T2SS Weight: ISU - 210 lbs., MGS - 40 lbs., and TML - 145 lbs.

SENSOR/SEEKER: 1st Generation Target Acquisition FLIR based on the DT635A common module detector. The detector is an 8-10u imaging infrared (IIR) Mercury-Cadmium-Telluride (Hg-Cd-Te).

WARHEAD: Not Applicable

TARGET SETS: Tanks, other vehicles, personnel, field fortifications, and other materiel targets.

CONTRACTOR: Raytheon Systems Company, for ISU, MGS, BELRF and cables. Metric Systems Corporation, for TOW Missile Launcher.

ACQUISITION PHASE: Procurement/Fielding on the BFVS A2ODS.

MILESTONES:

Milestone II FY 82

Milestone IIIA FY 84

Milestone III FY 85

FIELDING: BFVS A2: FUE FY 85. BFVS A2/ODS: FUE FY 97.

The T2SS, as a subsystem of the Bradley A2 and A2ODS vehicles, is deployed to US Army heavy divisions and brigades and to the Royal Saudi Land Forces heavy brigades.

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**MANEUVER
BOS**

TOW BUNKER BUSTER

Close Combat Weapon Systems

MISSILE



SYSTEM DESCRIPTION: The TOW Bunker Buster missile system provides the Stryker Brigade Combat Team (SBCT) with an urban warfare weapon for contingency forces. The missile incorporates a newly developed high explosive, bulk charge warhead onto the existing, reliable TOW 2A missile airframe. The TOW Bunker Buster missile provides the capability to breach 8-inch thick, double reinforced concrete walls and provides a structural overmatch against earth and timber bunkers. The missile uses existing TOW 2A flight algorithms and can be fired from existing TOW platforms. The TOW Bunker Buster Missile is fired from the Anti-Tank Guided Missile (ATGM) variant of the Stryker Vehicle.

SYSTEM CHARACTERISTICS: The TOW Bunker Buster missile is optimized for performance against urban terrain targets and field fortifications. The range of the missile is 65 - 3750 meters. The weight of the TOW Bunker Buster missile is approximately 45.2 pounds and is nominally 6 inches in diameter. The encased missile weight is approximately 63.7 pounds and the diameter is 8.6 inches.

SENSOR/SEEKER: The TOW Bunker Buster has an impact sensor (crush switch) located in the main-charge ogive and a pyrotechnic detonation delay to enhance warhead effectiveness.

WARHEAD: The TOW Bunker Buster has a 6.25 pound, 6 inch diameter high explosive, bulk charge warhead. The PBXN-109 explosive is housed in a thick casing for maximum performance.

TARGET SETS: Urban structures, bunkers & field fortifications.

CONTRACTOR: U.S. Army development and production.

ACQUISITION PHASE: Rapid response program.
Awaiting funding for EMD & Production phases.

MILESTONES: Program is complete.

FIELDING: 500 Missiles are available to support Stryker Brigades.

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**MANEUVER
BOS**

M220A2 TOW WEAPON SYSTEM

Close Combat Weapon Systems

MISSILE



SYSTEM DESCRIPTION: The TOW (Tube-launched, Optically-tracked, Wire-guided) missile is a long range heavy anti-tank weapon system, consisting of a launcher and a missile. The automatic missile tracking and control capabilities of the TOW weapon system provide a high first-round-hit probability. To operate the system, the gunner places the cross hairs of the sighting system (either the daysight tracker or the nightsight) on the target, fires the missile, and centers the cross hairs on the target image until missile impact. The optical tracking and command functions within the system guide the missile along the gunner's line-of-sight. The gunner does not apply lead, windage, or elevation. The TOW also provides a long-range assault capability against heavily fortified bunkers, pill boxes, and gunemplacements.

SYSTEM CHARACTERISTICS: The M220A2 TOW 2 launcher is compatible with all TOW missile configurations. The traversing units, the digital MGS, and the thermal nightsight are improved on the M220A2 launcher. The launcher system weighs ~256.5 lbs with all of its components and carrying cases; with encased missile BGM-71D, it weighs ~318.5 lbs. The AN/UAS 12A/C Night Sight is the thermal Nightsight Equipment Set (NSES) used in conjunction with the M220A2 TOW 2 Launcher.

SENSOR/SEEKER: Optical sight with 13 power magnification and 1ST Generation FLIR based on the DT591A common module detector. The detector is an 8-10u imaging infrared IIR Mercury-Cadmium-Telluride (Hg-Cd-Te).

WARHEAD: All versions of TOW missiles.

TARGET SETS: Tanks, armored vehicles and field fortifications.

CONTRACTOR: Raytheon Systems Company, Tuscon.

ACQUISITION PHASE: US systems are in sustainment. Foreign systems are in production and sustainment.

MILESTONES: FMS production continues.

FIELDING: Fielded to US Army National Guard and U.S. Marine Corps light forces, and Foreign Military Sales to over 40 other countries.

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**MANEUVER
BOS**

IMPROVED TARGET ACQUISITION SYSTEM (ITAS)

Close Combat Weapon Systems

**TARGET
ACQUISITION**



SYSTEM DESCRIPTION: The Improved Target Acquisition System (ITAS) is a materiel change to the current TOW 2 ground launcher and M966 HMMWV TOW 2 acquisition and fire control subsystems. The TOW tripod and launch tube do not change. ITAS significantly increases target acquisition and engagement ranges, while retaining the capability to fire all configurations of the TOW missile. ITAS uses a second-generation forward-looking infrared system, digital components, and an eyesafe laser range finder. ITAS fires all versions of TOW.

SYSTEM CHARACTERISTICS: The ITAS is composed of a Target Acquisition Subsystem (TAS), Fire Control Subsystem (FCS), Battery Power Source (BPS), and modified Traversing Unit (TU). The TAS integrates a day and night sight and a laser range finder. The FCS includes processing, aided target tracker, and embedded training capabilities. The BPS provides dismounted power and acts as a battery charger and power conditioner. The modified TU includes a brake to dampen TOW launch transients, and pistol grips with switches that link with symbology visible in the TAS on a menu-driven display. ITAS eliminates two-thirds of the TOW2 LRU's significantly reducing operational and logistics burden. Maintenance is improved using extensive BIT/BITE. ITAS is mounted on the HMMWV and can be transported by helicopter (CH-47 and/or CH-53) and cargo aircraft. Detection range is beyond the maximum range of the TOW missile. System weight equal to or less than TOW 2 weapon system. Fires one missile at a time from the current family of TOW missiles and has built-in growth for improved/future missiles. ITAS is fielded with a Field Tactical Trainer (FTT) for force-on-force MILES TRAINING. A Basic Skills Trainer (BST) is in development to enhance sustainment training. ITAS sustainment is done by a Contractor Logistics Support (CLS) program.

SENSOR/SEEKER: Second Generation Target Acquisition FLIR based on the Army's Standard Advanced Dewar Assembly II (SADA II). The system also has a video thermal tracker and xenon beacon tracker. First fielded system with Second Generation FLIR.

WARHEAD: NotApplicable

TARGET SETS: Tanks, other vehicles, field fortifications, and other materiel targets.

CONTRACTOR: Raytheon Systems Company - Prime Contractor and Contractor Logistics Support (CLS); BAE Systems - Training Device (FTT).

ACQUISITION PHASE: Full Rate Production

MILESTONES:

Milestone II	Jan 93
LRIP IPR	Jul 96
Milestone III	May 99

FIELDING: FUE: Sep 98

82 ND ABN	2 ND ID
10 TH MTN	SBCTs
101 ST (IBDE)	

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**MANEUVER
BOS**

IMPROVED BRADLEY ACQUISITION SUBSYSTEM (IBAS)

Close Combat Weapon Systems

**TARGET
ACQUISITION**



SYSTEM DESCRIPTION: The Improved Bradley Acquisition Subsystem (IBAS) is a materiel change to the current Bradley T2SS. The IBAS, as part of the Bradley A3 modernization program, increases target acquisition and engagement ranges while retaining the capability to fire all TOW missile configurations. IBAS incorporates the Horizontal Technology Integration (HTI) B-kit second-generation FLIR, charged coupled device (CCD) camera, dual-axis stabilized head mirror, and the Bradley Eye-Safe Laser Range Finder (BELRF). IBAS leverages hardware and software commonality with ITAS. Over 20% of IBAS hardware and 35% of the software are common with ITAS. IBAS fires all versions of TOW and provides a bridge for a TOW follow-on missile.

SYSTEM CHARACTERISTICS: The IBAS is composed of a Target Acquisition Subsystem (TAS), Missile Control Subsystem (MCS), and modified TOW Missile Launcher (TML). The TAS integrates direct view optics with a day sight (CCD camera), thermal sight (HTI B-Kit FLIR), and a laser range finder. The MCS includes processing, target trackers, and future missile growth. TML modifications improve BIT/BITE and provide future missile growth capabilities. IBAS eliminates the current 180-day verification along with several pieces of support equipment. IBAS is mounted on the Bradley A3 and LOSAT platforms. Its detection range is beyond the maximum effective range of both the 25 mm gun and TOW missile. System Weight: 319 pounds with HTI B-Kit FLIR. Fires one missile at a time from the current family of TOW missiles.

SENSOR/SEEKER: Horizontal Technology Integration (HTI) B-Kit 2nd Generation Target Acquisition FLIR, Direct View Optic (DVO) and Day TV. The FLIR detector is an 8-10m Imaging Infrared (IIR) Mercury-Cadmimum-Telluride (Hg-Cd-Te).

WARHEAD: NotApplicable

TARGET SETS: Tanks, other vehicles, personnel, field fortifications, and other materiel targets.

CONTRACTOR: Raytheon Systems Company, DRS Optronics, Inc.

ACQUISITION PHASE: Full Rate Production.

MILESTONES:

Milestone II	Feb 94
Milestone IIIA	Jul 97
Milestone III	Apr 01
Full Rate Production	May 01

FIELDING: FUE: Nov 00 to 2/8 In, 4th ID. IBAS will be fielded to the current heavy forces.

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**MANEUVER
BOS**

LINE-OF-SIGHT ANTI-TANK (LOSAT)

Close Combat Weapon Systems

**TARGET
ACQUISITION**



SYSTEM DESCRIPTION: The Line-of-Sight Antitank (LOSAT) is an antitank weapon system which provides overwhelming accuracy, lethality and rapid rate of fire at ranges exceeding tank main gun range. The system is comprised of four hypervelocity kinetic energy missiles (KEM) and a modified IBAS target acquisition system mounted on a modified expanded capacity HMMWV chassis.

SYSTEM CHARACTERISTICS: The missile accelerates to 5000 feet per second, flies to typical engagement ranges in less than five seconds, and delivers five times the kinetic energy of tank rounds. The LOSAT is the Army's first to be fielded Kinetic Energy Missile (KEM)-the pathfinder for all future KEMs-and fills an urgent operational requirement for overmatching capability in the light forces. The fire control system allows the gunner or commander to acquire and auto-track up to two targets simultaneously. Once a launch consent is issued, the system automatically initializes and guides the missiles to the targets in a sequential manner. The LOSAT system is deployable by C-130 and larger aircraft, and it can be airlifted by the UH-60L and larger helicopters. It can also be deployed via airdrop. Fire Unit Dry Weight 9,000 lbs. Fire Unit Combat Weight, 11,332 lbs. The missile is 113 inches in length, 6.4 inches in diameter, and weighs 178 lbs. The range is in excess of 4 km.

SENSOR/SEEKER: The fire unit mounted electro-optical system (EOS) includes a 2nd generation FLIR with a 480X4 focal plane array and Charged Coupled Device (CCD) TV camera. The missile does not have a seeker but relies on the EOS to provide target information via a laser uplink.

WARHEAD: Heavy metal long rod penetrator - no fuze or S&A device required.

TARGET SETS:

Primary - Heavy Armor Vehicles and Bunkers
Secondary - Helicopters, Light Armor Vehicles

CONTRACTOR: Lockheed Martin Missiles and Fire Control, Dallas, TX.

ACQUISITION PHASE: Advanced Concept Technology Demonstration (ACTD) and the SDD programs are being executed concurrently (ACTDPlus).

MILESTONES:

Milestone II (B) Review	Sep 00
ACTD Plus (EMD) Contract Award	Dec 00
Successful Risk Reduction Flights	May/Jun 01
Successful Guided Flight Against Tank Target at 4 km	Jun 03
Successful Guided Flight Against Reinforced Urban Structure	Jul 03
Successful Guided Flight Against Tank Target	Aug 03
Milestone MS C	Apr 04

FIELDING: ACTD residuals fielded in FY 04.

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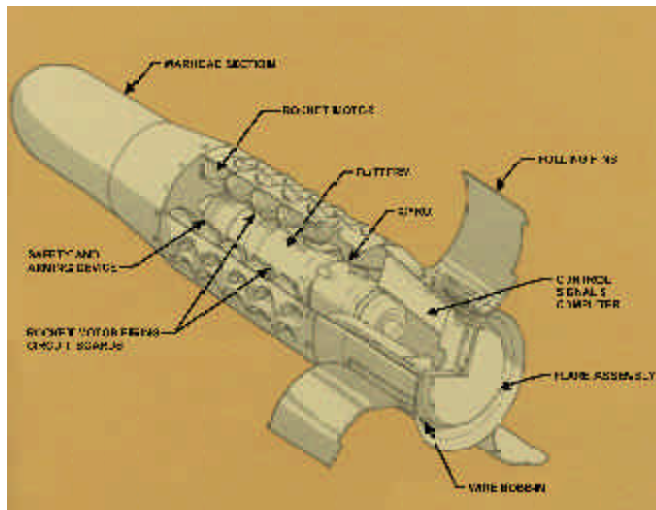


**MANEUVER
BOS**

DRAGON WEAPON SYSTEM

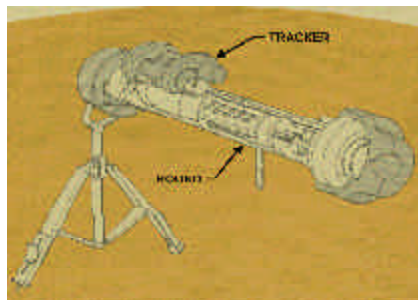
Close Combat Weapon Systems

**TARGET
ACQUISITION**



WEAPON SYSTEM DESCRIPTION: The DRAGON is a command-to-line-of-sight guided missile system. Fired from a recoilless launcher, the missile is tracked optically and is guided automatically to the target by electrical impulses transmitted via a wire link.

The weapon consists of two major parts – a tracker and a round. Overall length is approximately 44 inches and the total weight ready-to-fire is 30.9 pounds.



SYSTEM CHARACTERISTICS: The three key components of the missile are: (1) Warhead Section; (2) Center Section; (3) Aft Section.

The warhead section contains the explosive charge, the fuze and the safety and arming device. The center section houses the electronic circuitry boards and the solid propellant side thrusters. These propellant units sustain the missile's flight and provide the forces necessary to control its "on-target" flight path.

The following makes up the aft section: (1) folding fins; (2) missile battery; (3) gyroscope; (4) control signals computer; (5) wire bobbin; and (6) flare assembly. Overall length of the missile is 29.3 inches and it's weight is about 13.8 pounds at launch.

DRAGON GENERATION I

The DRAGON Weapon System was developed by McDonnell Douglas Corporation (MDC), under contract to USAMICOM in the mid 1960s. In 1968 the first production contract was awarded. The system was manufactured at a high rate of production during the 1970s. During this period, more than 206,000 rounds were manufactured by two companies; MDC and Raytheon. A total of 14,972 Day Trackers and 3,229 Night Vision Trackers were produced.

DRAGON GENERATION II

In August of 1986, the Naval Surface Warfare Center (NSWC), Dahlgren, Virginia awarded two contracts; a Product Improvement Program Generation II contract. The Generation II contract consisted of upgrading the original Generation I system to increase warhead performance. This included retrofitting the missile with an improved full caliber shaped charged warhead and a new removable forward shock absorber. A production retrofit assembly line was established and 22,000 rounds were upgraded during 1988 -1992.

MILESTONES:

Dragon I Production	1970's
First Unit Equipped	1975
Center Body Rebuild	1980's
Dragon II Warhead Upgrade	1988-1992
Safety Circuit Retrofit	1994-1998

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Anti-Tank Platoon, 2nd Brigade, 101st Abn Div,
firing TOW 2A Missile from an ITAS,
22 July 2003, in Mosul, Iraq.